REMARKS

Claims 1, 3-5, 8-10, 13-16, 18, 24, 26-29, 31-37, 39-41, 43, and 45-49 were pending in the application. Claims 4, 8, 14-16, 26-29, 34, 37, and 45 have been canceled in this amendment. Claims 1, 9, 13, 18, 24, 31, 41, 43, 48, and 49 are currently amended to more distinctly point out novel features of the present invention. New claims 50-53 have been added. Support for new claims and for claim amendments can be found in the specification as originally filed. Claims 1, 3, 5, 9-10, 13, 18, 24, 31-33, 35-36, 39-41, 43, and 46-53 are now pending. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 103

Claims 1, 3-5, 8-10, 24, 26-29, 31-37, 39-41, 43, and 45-49 stand rejected under 35 USC § 103(a) as being unpatentable over Park (U.S. Pub. No. 2003/0031173) in view of "well-known" prior art and Farinacci (U.S. Pat. No. 7,016,351). Claims 13-16 and 18 stand rejected under 35 USC § 103(a) as being unpatentable over Park-Farinacci in view of "well-known" prior art. These rejections are respectfully traversed with respect to those claims still pending.

Applicants believe that Farinacci does not resolve the shortcomings of Park, and further, that there is no motivation to combine Farinacci with Park. Park provides for swapping addresses between an options field of a packet header and the source and destination address fields of the packet header. This allows Park to provide for a single level of Network Address Translation (NAT) between a private network and a public

network. The present disclosure, as claimed, allows for "at least one intermediate private network" between private and public networks, as recited by Claim 1.

The invention of Park cannot be easily extended to a situation where there are multiple levels of NAT, such as when intermediate private networks lie between the private and public networks. In Park, addresses are simply swapped between the header and the source or destination address fields. This allows for only one swap operation, and thus only one level of translation.

Further, according to Park, a transmitting host must know a priori the public address of the router located between the transmitting host and the public network. The host can then place the public address in the header prior to transmitting the packet. In the present disclosure, as a packet is forwarded through NAT routers to the public network, the routers themselves building a path for traversing the multiple levels of NAT by adding their public addresses to a stack within the options field of the packet. For these reasons alone, the present disclosure is not simply a multiple-level implementation of Park.

Farinacci does teach placing multiple-level routing information within a header of a packet. However, this routing information defines paths within a public network. The present disclosure provides routing information for hosts that are not located within the public network and would otherwise be nonroutable. If Farinacci desired to traverse multiple NAT layers, Farinacci would need to employ a solution such as the present disclosure to allow the traversal. Further, Farinacci does not "extract" from or "reformat" the options field of a packet, as Claim 1 recites. Farinacci instead encapsulates the

entire packet with a new Layer 3 header, into which Farinacci places routing information.

In contrast to Park and the present disclosure, Farinacci is concerned with minimizing the storage and processing requirements of employing multicast groups. Under Farinacci, a first router encapsulates a multicast packet with a distribution tree for a multicast group specified by the multicast packet. This means that only that first router must store distribution information for the multicast group. The encapsulated packet specifies the routing information, allowing downstream routers to simply route the packet as directed.

Neither of these advantages is applicable to the present disclosure, which solves the problem of traversing multiple private networks separated by NAT. Unlike Farinacci, no router stores end-to-end routing information. Instead, each router simply adds its own address to a packet header, or forwards a packet based on its packet header. There is no overhead or processing involved that might be lessened by an invention like Farinacci.

In conclusion, the motivations to combine cited by the Examiner, namely reducing processing overhead, reducing network bandwidth, and reducing time delay are advantages offered by the invention of Farinacci. These advantages are only applicable when using multicast groups, however. They are inapplicable to hierarchical traversal, without which direct communication between hosts behind multiple layers of NAT is not possible, regardless of processing time or network bandwidth. The present disclosure solves a fundamentally different problem than Farinacci and uses a different
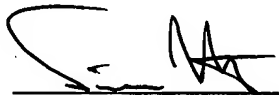
approach. Claims 3, 5, 9-10, 13, 18, 24, 31-33, 35-36, 39-41, 43, and 46-53 are in condition for allowance for at least similar reasons.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: DEC. 13, 2006

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